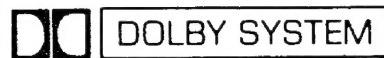


SUPER TUNER II

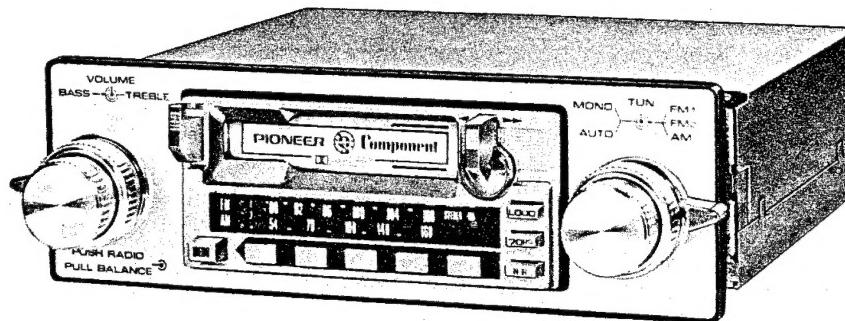
COMPONENT CAR STEREO
CASSETTE DECK WITH
AM/FM ELECTRONIC TUNER

MODEL KEX-20

US



OWNER'S MANUAL



Thank you for purchasing this PIONEER product.
Before operating it, be sure to read this manual.

IMPORTANT

Please record the serial number of your unit in the space provided below and keep as a permanent record. The location of the serial number is shown in the connection diagram on the inside.

SERIAL No. _____

PIONEER®

The Pioneer logo symbol is a stylized 'P' composed of three nested, rounded, vertical shapes.

CARE & MAINTENANCE

- **Before Using Cassette Tape**

A loosely wound cassette tape could possibly be damaged. Prior to using such tape, tighten it in a manner as guided by Fig. 1. A carelessly wound cassette tape will cause unnecessary tension on the tape resulting in the cassette springing out while the tape is running. For prevention, rewind the tape through fast forwarding or rewinding.

- **Recommended Cassette Tape**

C-30, C-60 and C-90 tapes are recommended.

- **Storing of Cassette Tape**

Do not store the cassette tape in a place of high temperature or high humidity (above 45°C or 60%, respectively). For example, do not leave the cassette tape on a seat exposed to direct sunlight, on the dashboard or rear board, or in a place exposed to the hot blast of a heater. Also keep it away from magnetic sources. To store the cassette tape, place it in the cassette case to prevent the tape from loosening.

- **Avoid Oiling**

Never oil the revolving part. Oiling will cause idle turning of the cassette, resulting in the failure of the cassette to rewind normally.

- **Maintenance of Head**

The surface of the head is liable to become dirty through normal use. Where the symptom of "poor sound" or "loss of high-pitched tone reproduction" appears, clean the head surface with a cotton applicator soaked with head cleaning liquid: Give the head periodical cleaning, once or twice a month when the tape is played more than an hour a day. If the tape is not used often, the head should be cleaned at least once or twice every two or three months. (Fig. 2)

- **Battery change**

KEX-20 has an internal memory circuit which makes it possible to memorize the broadcasting stations. This circuit, however, requires a constant source of power to remain functional. At the time of battery change, the supply of power is interrupted thereby cancelling every frequency which had been stored in memory. After a battery has been changed, reset the memory function.

- **When driving, the volume should be maintained low enough as to make it possible to hear outside.**

- **In Case of Trouble**

When the unit does not operate properly, contact your dealer or the nearest authorized PIONEER Service Station.

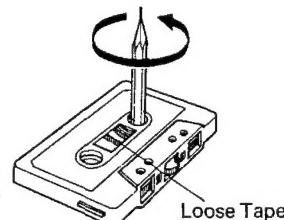


Fig. 1

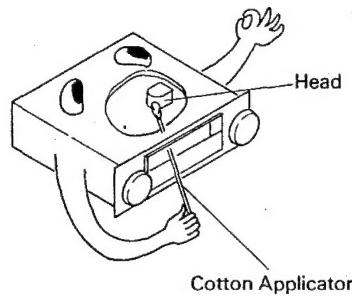


Fig. 2

SPECIFICATIONS

General

Power source	DC 14.4V (10.8~15.6V allowable)
Grounding system	Negative type
Dimensions (W × H × D)	180 × 50 × 150 mm (7-1/8 × 2 × 5-7/8 in.)
Nose size (W × H × D)	105 × 45 × 30 mm (4-1/8 × 1-3/4 × 1-1/8 in.)
Shaft interval	147 mm (5-3/4 in.)
Weight	1.8 kg (4.0 lbs.)
Tone controls	Bass: ± 10 dB (100 Hz) Treble: ± 10 dB (10 kHz)
Loudness contour	+ 12 dB (100 Hz), + 4 dB (10 kHz)
Maximum output level	More than 200 mV
Output impedance	100Ω

Tape player

Tape	Compact cassette tape (C-30~C-90)
Tape speed	4.8 cm/sec. (1-7/8 ips)
Fast forward/rewind time	Within 120 sec. for C-60
Wow & flutter	No more than 0.13% (WRMS)
Frequency response	30~15,000 Hz (±3 dB)
Stereo separation	More than 46 dB
Signal-to-noise ratio	Dolby NR IN: more than 60 dB Dolby NR OUT: more than 52 dB

FM tuner

Frequency range	88~108 MHz
Usable sensitivity	16.8 dBf (1.9 μV/75Ω)
50 dB quieting sensitivity	19.2 dBf (2.5 μV/75Ω)
Signal-to-noise ratio	68 dB
Capture ratio	2 dB
Selectivity	74 dB (±400 kHz)
Distortion	0.3% (at 65 dBf, 1 kHz, mono)
Frequency response	30~15,000 Hz (±3 dB)
Stereo separation	45 dB (at 65 dBf, 1 kHz)

AM tuner

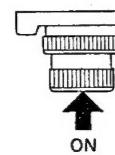
Frequency range	525~1,620 kHz
Usable sensitivity	30 μV
Selectivity	40 dB (±10 kHz)

Note:

Specifications and the design subject to possible modification without notice due to improvements.

OPERATION

Radio Switch
Push knob to switch ON power.



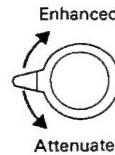
Volume Control



Balance Control
Pull the knob to the lock position, and then turn the knob for balance.



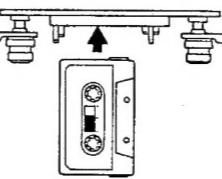
Bass Control



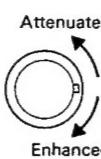
Release/Eject Button
Push this button to stop fast forward and rewind operations.
When playing, push to stop and eject the cassette.

Band Indicator Lamp
Orange: FM1
Red: FM2
Green: AM

Cassette Door
Insert a cassette with desired side upward and the openings facing the right. Push until the cassette automatically locks in position. When the tape has played, it will automatically stop, and the cassette will pop out. To listen to the reverse side of the cassette, turn it over end for end and reinsert it into the cassette door. When a cassette is inserted while listening to the radio, the KEX-20 will automatically change over to the tape playing function.



Treble Control

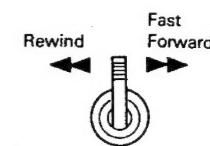


Dolby NR Indicator

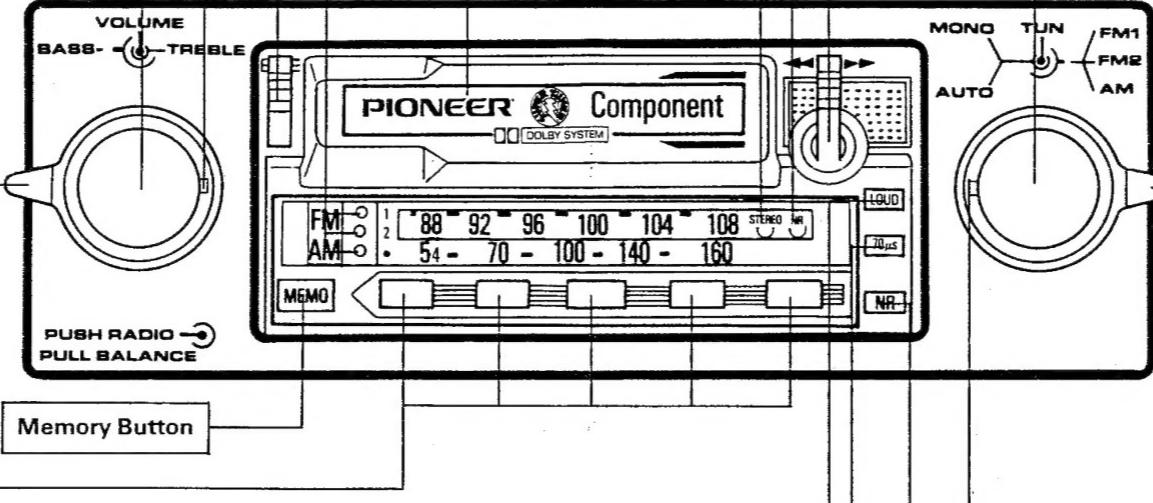
FM Stereo Indicator
This indicator will light while receiving a FM stereo broadcast.

Fast Forward/Rewind Knob
To fast forward or rewind, turn the knob to \blacktriangleright or \blacktriangleleft respectively, until it locks. To stop fast forward or rewind, push the Release button, and tape will automatically start playing again.

When the tape has completed fast forward, the cassette will automatically pop out and power will be off. When the tape is rewound to the starting position, the tape will automatically begin playing again.



Tuning Knob
Turn left or right to select the desired station.



Tuning Preset Buttons

When your favorite broadcasting stations have been stored in the memory by five buttons, you can select from a total of 15 stations (5 with FM1, 5 with FM2 and 5 with AM) by pressing just one button.

• Setting the Tuning Preset Buttons

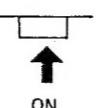
- (1) Set the band selector switch to FM1 and FM2 for FM broadcasting and to AM for AM broadcasting.
- (2) Manually tune to the desired station.
- (3) With the memory button kept depressed, press the preset button of your choice. Repeat the process to set each of the other buttons.

Caution:

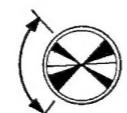
Do not press the memory button only when presetting a station.

Loudness Switch

When the volume control is within this limit, the loudness switch should be ON for enhanced bass and treble performance.

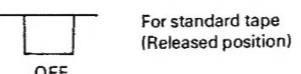


Loudness ON within this limit.

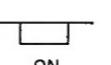


Tape Selector Switch

Set this switch to the position that corresponds to the type of tape you are using.



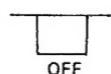
For standard tape (Released position)



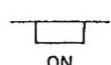
For metal and chrome tapes (Depressed position)

Dolby NR Switch

When listening to a Dolby encoded tape, press this switch, and Dolby NR Indicator will light.



Tape recorded by conventional methods.



Tape recorded with the Dolby System.

FM Auto/Mono Selector Switch
This switch is functional only on FM reception.

FM Auto:

Normally, turn the switch to auto position. The following functions are automatically activated according to the strength of incoming FM signal and enable pleasant, noise-free listening:

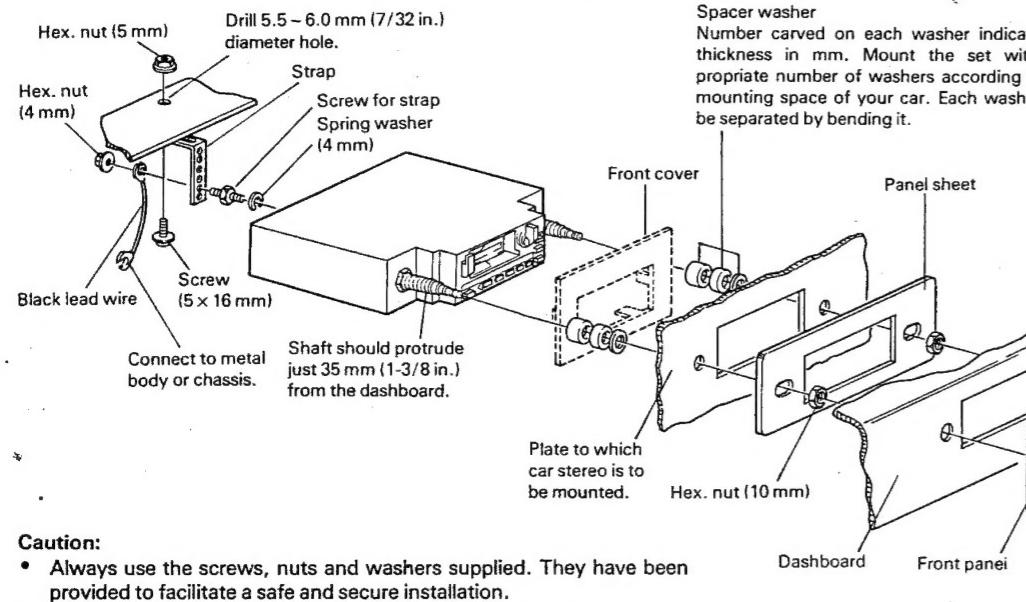
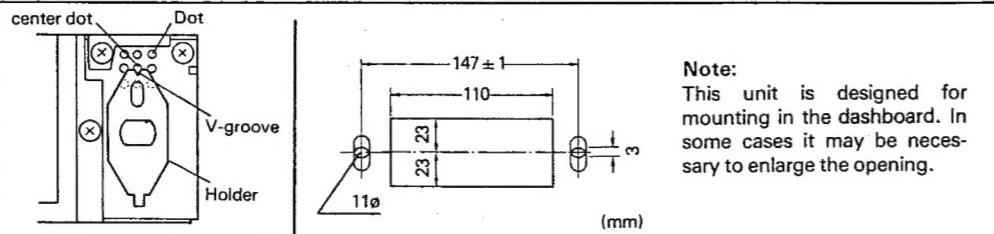
- When FM stereo signal is strong, it is reproduced with Hi-Fi stereo quality.
- As the signal weakens, reception is automatically controlled (stereo separation is gradually narrowed and high frequency is slightly attenuated) to reduce background noise. As the signal further weakens, reception becomes monaural.
- When the signal gets weak beyond practical listening, output is down to minimum.

FM Mono:

Regardless of the strength of FM signal or stereo/mono, reception is always in monaural.

INSTALLATION

To adjust shaft interval, loosen nut and screw. Next, one of the 9 dots indicated in the figure will join the V-groove of the holder. If one shifts the holder from central dot towards outside cavity, it becomes 148 mm and if towards inside cavity it becomes 146 mm. It moves up and down to 1.5 mm each.

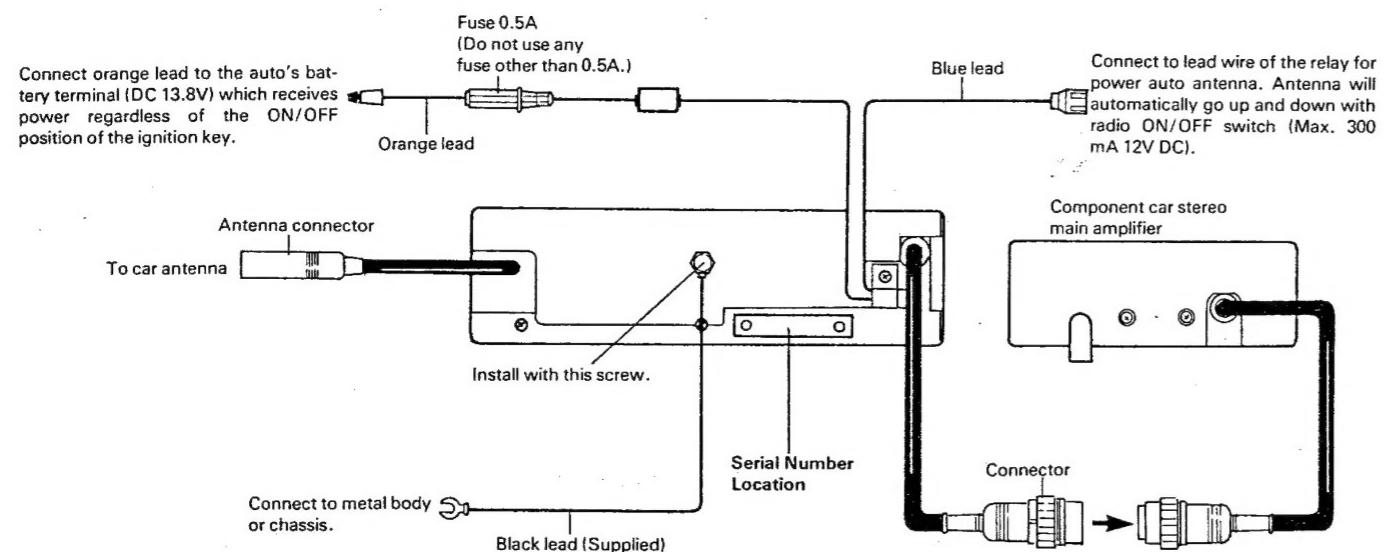


Caution:

- Always use the screws, nuts and washers supplied. They have been provided to facilitate a safe and secure installation.
- When power is turned off—at the car's ignition switch—be certain to eject the cassette. Otherwise, a flat spot will develop on the pinch roller, causing severe wow and flutter.
- When installing the car stereo, be sure to fix the rear part of the set with a strap.

CONNECTION

- Connection is easy by plugging in a connector to the main amplifier. For the connection with speakers, see the owner's manual of the main amplifier.



FEATURES

- Supertuner II.** The famous Supertuner has been further improved. It's not only sensitive ($1.9\mu\text{V}$) but also delivers FM music with less noise, more clarity and greater stability almost everywhere.
- An electronic preset system allows you a choice of a total of 15 stations: 10 FM stations (five stations on FM1 and five stations on FM2) and five AM stations.
- Reduced tape hiss noise with built-in Dolby system.
- Metal/Chrome tape capable. Combination of hard permalloy head and $70\ \mu\text{sec}$. tape equalization selector for premium Metal/Chrome tape playback.

- A built-in noise suppressor minimizes ignition noise picked up by your car antenna and also reduces multi-path interference.
- Further improvement and variation is possible with the additional purchase of such accessories as a main amplifier and speaker system.

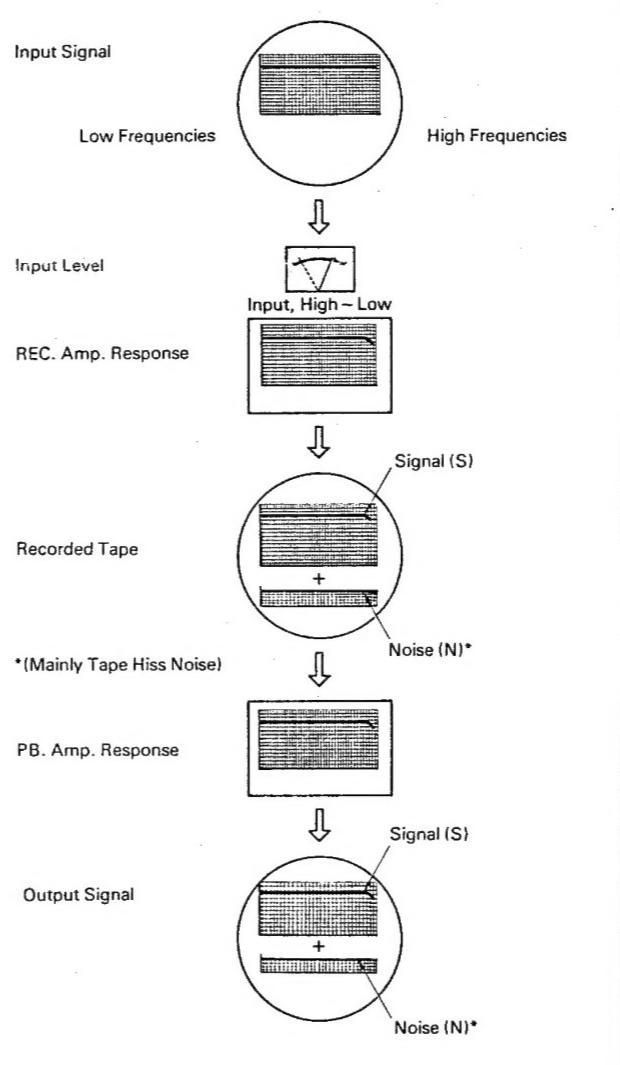
* Manufactured under license from Dolby Laboratories.

* The word "Dolby" and  are trademarks of Dolby Laboratories.

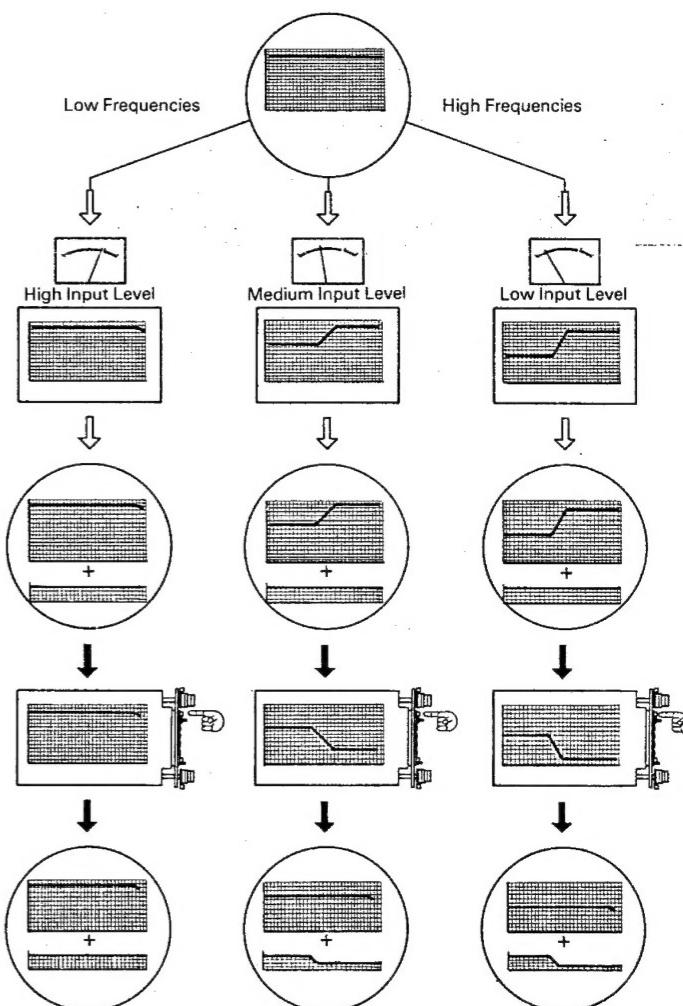
USING THE DOLBY SYSTEM

- The KEX-20 incorporates the Dolby System which greatly reduces hiss noise (noise generated from the tape). When listening to a Dolby encoded tape, depress the Dolby NR switch, and music can be enjoyed with hiss reduced to a minimum.
- During recording, when the input signal drops below the reference level, the mid and high frequency components are enhanced. The opposite process is employed during

Tape Recording/Playback by the Conventional Method



Tape Recording/Playback by the Dolby System



- Recording and playback amplifier response is fixed without regard to input and output levels. If the original level is low, the SN ratio declines, rendering hiss noise more apparent.
- Recording and playback amplifier response varies according to input and output levels. Noise reduction effect is greatest at low levels, where hiss noise in mid and high frequencies becomes more apparent due to reduced SN ratio.

LIMITED WARRANTY

THIS PRODUCT IS COVERED BY PIONEER'S STANDARD
WARRANTY. SEE SEPARATE ENCLOSURE FOR DETAILS.

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